

Curriculum Vitae for Peter Willendrup

Mailing adress:

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Education

- **1992-2000** Studies of Physics (M.Sc.) and Mathematics (B.Sc.) at the University of Copenhagen
- **2000-2002** Courses relevant to my employment at Neurobiology Research Unit
- **2002-** Courses relevant to my employment at Forskningscenter Risø Risø DTU and DTU Physics

Employment

- **1998-1999** Physics teacher at Skt. Annæ Gymnasium for 6 months
- **2000-2002** Research assistant at Neurobiology Research Unit, Rigshospitalet
- **2002-2006** Development Engineer (Technical director of McStas) at the Materials Research Department at RISØ
- **2007-2011** Development Engineer (Technical director of McStas) at the Materials Research Department, Risø DTU
- **2012-** Senior Research Engineer, Special Advisor (Technical director of McStas) at DTU Department of Physics

Main projects

- **McStas** - versions 1.7, 1.8, 1.9, 1.9.1, 1.10, 1.11, 1.12, 1.12a, 1.12b, 1.12c, 2.0, 2.1, 2.2, 2.2a, 2.3, 2.4 and 2.4.1 of the neutron ray tracing package - developed for Risø and later DTU Physics in collaboration with NBI, KU, PSI and ILL
- **McXtrace** - X-ray equivalent of McStas, currently in startup phase, developed for Risø and later DTU Physics in collaboration with NBI, KU and ESRF
- **d3view** - 3D visualisation package for brain images - developed for Neurobiology Research Unit. The 'Viden om' TV show on science has had two features about brain imaging and brain surgery once available in REAL video format in which d3view is used for visualisation. Also used for front cover illustrations in *Neuroimage* (1), (2), (3).
- **MARS** - *Multiple Algorithms for Registration of Scans* - image registration framework - developed for Neurobiology Research Unit
- Simulation package for investigating parameter significance in tomographic imaging - for my masters thesis
- **PSD4SC** - host of infrastructure for European software collaboration on single crystal diffraction with neutrons.

Selected Publications

1. T. Kittelmann, E. Klinkby, E.B. Knudsen, **P. Willendrup**, X.X. Cai, K. Kanakia; Monte Carlo Particle Lists: MCPL, *Computer Physics Communications*, Volume 218, September 2017, Pages 17-42, ISSN 0010-4655, <https://doi.org/10.1016/j.cpc.2017.04.012>
2. Schönfeldt T, Batkov K, Klinkby E.B., Lauritzen B., Mezei F., Muhrer G., Pitcher E., Takibayev A., **Willendrup P.K.**, Zanini L.; Broad spectrum moderators and advanced reflector filters using Pb-208. Nuclear Inst. and Methods in Physics Research, A – Volume 769, Issue 1, pp 1-4
3. Thomsena M., Knudsen E.B., **Willendrup P.K.**, Bech M., Willner M., Pfeiffer F., Poulsen M., Lefmann K., Feidenhansl R.; Prediction of beam hardening artefacts in computed tomography using Monte Carlo simulations. Nuclear Inst. and Methods in Physics Research, B – Volume 342, Issue 1, pp 314-320
4. Farhi E.; Debab Y., **Willendrup P.**; iFit: A new data analysis framework. Applications for data reduction and optimization of neutron scattering instrument simulations with McStas. Journal of Neutron Research **17**, 2014 pp. 5-18
5. Knudsen E.; Tranum-Rømer A.; Christiansen P.; **Willendrup P.**; Lefmann K.; Investigation of propagation algorithms for ray-tracing simulation of polarized neutrons. Journal of Neutron Research **17**, 2014 pp. 27-34
6. **Willendrup, P.**; Farhi E.; Knudsen E.; Filges U.; Lefmann K; McStas: past, present and future. Journal of Neutron Research **17**, 2014 pp. 35-43
7. Farhi E.; Monzat C.; Arnerin R.; van Vuure T.; Castn-Guerrero C.; Hennane C.; Harraud P.A., G; Campioni M.; Fuard S.; Ollivier J.; **Willendrup P.**; Journal of Neutron Research **17**, 2014 pp. 63-74 Advanced sources and optical components for the McStas neutron scattering instrument simulation package.
8. **Willendrup, P.K.**; Cussen, L.D.; Numerical simulation study of the performance of a small neutron three axis spectrometer In: Nuclear Inst. and Methods in Physics Research, A – 2011, Volume 637, Issue 1, pp. 109-118
9. Klenø Kaspar H; **Willendrup, Peter K.**; Knudsen, Erik; Lefmann, Kim; Eliminating line of sight in elliptic guides using gravitational curving In: Nuclear Inst. and Methods in Physics Research, A – 2011, Volume 634, Issue 1, pp. S100-S103
10. Udby, L.; **Willendrup, P.K.**; Knudsen, E.; Niedermayer, Ch.; Filges, U.; Christensen, N.B.; Farhi, E.; Wells, .B.O. ; Lefmann, K.; Analyzing neutron scattering data using McStas virtual experiments In: Nuclear Inst. and Methods in Physics Research, A – 2011, Volume 634, Issue 1, pp. S138-S143
11. **Willendrup, Peter K.**; Udby, Linda; Knudsen, Erik; Farhi, Emmanuel; Lefmann, Kim; Using McStas for modelling complex optics, using simple building bricks In: Nuclear Inst. and Methods in Physics Research, A – 2011, Volume 634, Issue 1, pp. S150-S155
12. Knudsen E.; Udby L.; **Willendrup P.**; Lefmann K.; Bouwman, W.G.; McStas-model of the delft SESANS Physica B-Cond Matt Volume 406 p 2361 (2011)
13. Prodi, A.; Knudsen, E.; **Willendrup, P.**; Schmidt, S.; Ferrero, C.; Feidenhans'l, R.; Lefmann, Kim; A Monte Carlo approach for simulating the propagation of partially coherent x-ray beams In: Proceedings of SPIE, the International Society for Optical Engineering – 2011, Volume 8141, Issue 1
14. Knudsen, E.; Prodi, A.; **Willendrup, P.**; Lefmann, K.; Baltser, J.; Gundlach, C.; Del Rio, M.S.; Ferrero, C.; Feidenhans'l, R.; McXtrace: A modern ray-tracing package for X-ray instrumentation In: Proceedings of SPIE, the International Society for Optical Engineering – 2011, Volume 8141, Issue 1
15. H Schober, E Farhi, F Mezei, P Allenspach, K Andersen, PM Bentley, P Christiansen, B Cubitt, RK Heenan, J Kulda, P Langan, K Lefmann, K Lieutenant, M Monkenbusch, **P Willendrup**, J Saroun, P Tindemans, G Zsigmond: *Tailored instrumentation for long-pulse neutron spallation sources*, (Nuclear Instruments and Methods A., **589**, (2008), 34-36.)

16. Geza Zsigmond, Sergey Manoshin, Klaus Lieutenant, Philip A. Seeger, Peter Christiansen, **Peter Willendrup**, Kim Lefmann: *Monte Carlo simulations for the development of polarized neutron instrumentation: An overview*, Physica B, **397**, (2007), 115-119.)
17. **Peter Willendrup**, Uwe Filges, Lukas Keller, Emmanuel Farhi, Kim Lefmann: *Validation of a realistic powder sample using data from DMC at PSI*, ICNS 2005 (Physica B, **386**, (2006), 1032.)
18. **Willendrup P.** Farhi E. Lefmann K. *McStas 1.7 - A New Version of the Flexible Monte Carlo Neutron Scattering Package*. Appeared at ECNS 2003 and 24th Risø symposium
19. Andersen P. Lefmann K. **Willendrup P.** Farhi E. *Monte Carlo Simulations as part of the Instrument Configuration in Neutron Scattering*. Appeared at ECNS 2003
20. *Popular article:* Author: **Willendrup, Peter Kjær**, Jørgensen, Mads Ry Vogel, Lefmann, Kim; Haldrup, Kristoffer; Tre tigerspring for materialeforskningen In: *Aktuel Naturvidenskab* 2015(1), p. 8-13
21. *Popular article:* Author: Lefmann, Kim; Arleth, Lise; Christensen, Niels Bech; Pape Møller, Søren; Skelboe, Stig; **Willendrup, Peter Kjær**; Supermikroskopet ESS - DM fagligt forum 2013
22. *Popular article:* Author: Lefmann, Kim; Arleth, Lise; Christensen, Niels Bech; Pape Møller, Søren; Skelboe, Stig; **Willendrup, Peter Kjær**; Under motorhjelm på supermikroskopet ESS - DM fagligt forum 2013
23. *Popular article:* Author: Lefmann, Kim; Arleth, Lise; Christensen, Niels Bech; Pape Møller, Søren; Skelboe, Stig; **Willendrup, Peter Kjær**; ESS: en forskningsfacilitet i verdensklasse under opbygning i Lund In: *Kvant* 2011(1), p. 25-32
24. *Book:* S. Peggs et al (more than 400 co-authors), *ESS Technical Design Report*, ISBN 978-91-980173-2-8, Lund (S), April 2013
25. *Book(s):* **Willendrup P.** Farhi E. Lefmann K. *User and Programmers Guide to the Neutron Ray-Tracing Package McStas, Version 1.12* (Risø-R-1416(rev.ed.)(EN), 978-87-550-3679-6) - and similar manuals for older releases
26. *Book(s):* Lefmann K. **Willendrup P.** Farhi E. *Component Manual for the Neutron Ray-Tracing Package McStas, Version 1.12* (Risø-R-1538(rev.ed.)(EN), ISBN 978-87-550-3680-2) - and similar manuals for older releases